PROPOSED

COVERED SOURCE PERMIT REVIEW FOR CSP NO. 0087-02-C
APPLICATION FOR RENEWAL NO. 0087-03

Facility Title / Applicant: Applied Energy Services (AES) Hawaii, Inc.

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Proposed Project:

General Information

The AES Hawaii, Inc. (AES) facility is a 180 megawatt (MW) coal-fired cogeneration plant. This facility is located at Campbell Industrial Park on the southwest corner of Oahu, approximately 3,000 feet north of Barbers Point. It is bounded by the Honolulu Program of Waste Energy Recovery (HPOWER) to the north, a prestress company and Hanua Street to the east, Hawaiian Cement and Kaomi Loop to the south, and vacant land to the west. The terrain is flat and is approximately 10 feet above mean sea level. AES was the first major coal-fired electric power plant constructed in Hawaii 1990. It is considered a cogeneration facility because it sells steam to Chevron U.S.A. refinery and electrical power to the Hawaiian Electric Company (HECO), and the remainder used at the facility. The Standard Industrial Classification Code (SICC) is 4911 since the facility generates electrical power for sale.

Power Plant

The power plant includes two (2) Alhstrom Pyropower Corp. circulating fluidized bed steam boilers with a total maximum design heat input of 2,150 MMBtu/hr. Each boiler includes a combustion zone, hot zone, and convective pass. Fuel is combusted in the combustion zone. The combustion products (gases and particulate matter) then move through the hot cyclone where the heavy particulate matter (partially burned fuel and ash) is separated from the hot exhaust gas. The hot exhaust gas, which includes fine particulate matter, moves into the convective pass for additional heat transfer to produce superheated steam for the turbine generator. The turbine generator is a single shaft, 3,600 rpm unit which generates electricity for transmission through a 138 kV power line from the plant to HECO's substation. AES is a fully dispatchable plant that operates 24 hr/day except during periodic maintenance shutdowns. Dispatchable means that it follows the load demand requirement which ranges from 35% to 100%.

Fuels for Power Plant

The power plant primarily fires coal during normal operations. The coal is purchased under a multi-year contract with an Indonesian supplier. The heating value of coal may vary between 9,000 and 12,000 Btu/lb and the maximum sulfur content is 1.5% by weight.

AES may use alternate fuels such as tire derived fuel (TDF), specification spec used oil, and activated carbon as supplemental fuel to the coal. The quantity of these fuels are very small in comparison to coal.

1. A maximum of 7.5 tph of TDF may be fed into the boilers. The TDF is received pre-processed from a supplier in sizes ½" and smaller. A blending system is used to combine the TDF with the coal.
2. A maximum of 3,000,000 gal of spec used oil may be fed into the boilers. Spec used oil is received from approved suppliers and stored in a 17,631 gal tank.
3. Spent activated carbon is considered similar to coal and therefore has no limit. It is usually supplied by Board of Water Supply or Tesoro Refinery.

Coal Processing

Coal storage is divided between active and inactive storage piles. Coal is normally received on-site via a fully enclosed, overland conveyor from the deep draft harbor. The maximum design capacity of the coal preparation equipment is 275 tph, but the normal coal feed rate is 107.5 tph to the boilers.

Limestone Processing

Limestone is delivered on-site via trucks and stored as active storage piles. The equipment includes front-end loaders, storage hoppers, conveyors, pneumatic lines, and two (2) 4.75 MMBtu/hr limestone pulverizer/dryers fired on fuel oil. The maximum design capacity is 40 tph of limestone.

Ash Handling

AES generates fly ash, bed ash, and conditioned ash as a combustion byproduct. The equipment includes front-end loaders, scarifiers, surge hoppers, conveyors, pneumatic lines, silos, and ash mixer. The ash are then transported off-site for commercial uses via trucks. The ash handling system was designed to process 186,800 tons of dry ash per year. Normal operations yield 80,000 tons per year.

Cooling Tower Operation

A wet cooling tower is used to dissipate heat loads. The circulating water rate is 104,000 gal/min, and the potential operating hours are 24 hours per day year-round (8,760 hours per year). The following calculations assume a drift elimination efficiency of 0.002% and total dissolved solids (TDS) of 44,000 mg/l entering the tower in make-up water as follows:

(0.00002) x (44,000 mg/l) x (0.0000022 lb/mg) x (104,000 gal/min) x (3.7854 l/gal) x (60 min/hour) = 45.73 lb PM_{10}/hour
(45.73 lb PM_{10}/hour) x (8,760 hour/year) x (1 ton/2000 lb) = 200.30 tpy

Air Pollutant Emissions

The primary emissions from the boiler consist of particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOC). Lesser amounts of hazardous air pollutants (HAPs) are also emitted from the boiler. PM is also generated from the coal processing, limestone processing, ash handling, and cooling tower. (see **Table No. 4**).

Permit Status

The facility is a major covered source since annual emissions for PM, SO_2, NO_x, CO, and VOC (criteria pollutants) each exceed 100 tpy and lead (Pb as HAPs) exceed 10 tpy. The facility is subject to Prevention of Significant Deterioration (PSD) requirements and is currently permitted by PSD No. HI 88-02 and CSP No. 0087-02-C dated February 18, 1998 and their amendments. This review is based on the application dated 1/25/01 and additional information dated 5/8/03 and 8/19/03. The application fee of $3,000 has been processed. The issuance of this permit will supersede CSP No. 0087-02-C dated February 18, 1998 and its amendments dated July 9, 1999 and August 17, 1999.

Equipment:

1. Two (2) boilers A and B manufactured by Alhstrom Pyropower Corp.

   A. Total maximum design heat input of 2,150 MMBtu/hr fired on coal, TDF, fuel oil, and spent activated carbon.

   B. Air pollution control devices for the boiler are low-temperature staged combustion, selective non-catalytic reduction (SNCR) with Ammonia/Urea Injection (Thermal $DeNO_x$), limestone injection, and two (2) baghouses (ABB Flakt Model 2, serial nos. 1CCB-CAB-1A and 1CCB-CAB-2A). The combined emissions flow through one stack.

2. 25,000 gal pressurized anhydrous ammonia storage tank

3. 60,000 gal fuel oil no. 2 above ground fixed roof storage tank
   18 ft high, 24 ft diameter, cone roof, with white shell (230.7 m^3).

4. 5-cell induced draft cooling tower
   104,000 gal/min, maximum drift rate 0.002%.

5. Coal processing

   A. Overland conveyor from the deep draft harbor to the stockpiles.
   B. Two (2) coal lowering wells.
   C. Active storage pile.
   D. Inactive storage pile.
   E. Tractors and front-end loaders.
   F. Coal reclaim hopper.
   G. Intermediate coal conveyors.
   H. 275 tph Coal crusher
   I. Coal storage silos.
   J. Mikro-Pulsaire baghouse (model no. 64S-8-40 “C”, serial no. 1CHD-DCO-1)

6. Limestone processing

   A. Active storage piles.
   B. Front-end loaders.
   C. Conveyors and pneumatic lines.
   D. Two (2) limestone pulverizer/dryers 40 tph (capacity) 4.75 MMBtu/hr each fired on fuel oil no. 2
   E. Storage hoppers.
   F. Two (2) Mikro-Pulsaire baghouses (model no. 420-S-10-50, serial nos. 1BMC-BGH-1A and 1BMC-BGH-1B)

7. Ash handling
   Pneumatic lines and storage silos.

Air Pollution Controls:

PSD No. HI 88-02 and/or EPA New Source Performance Standards (NSPS) at 40 CFR 60, specify the emission limits for the respective equipments:
Subpart Da - boiler air pollution control for PM, SO_2, NO_X;
Subpart Y - coal preparation air pollution control for opacity; and
Subpart OOO - mineral processing air pollution control for opacity.
These emissions are listed in the **Project Emissions** section.

<u>SNCR with Ammonia Injection (70% NOx reduction)</u>
NOx emissions are further controlled with SNCR using ammonia injection, or an alternative reducing agent like urea, at the inlet to the hot cyclone. This process breaks down the NO_x into water and atmospheric nitrogen. The SNCR system, Thermal DeNO_x designed and manufactured by Alhstrom Pyropower, is capable of meeting the permitted NO_x emission limits. The optimum combustion temperatures for the efficient use of ammonia injection are 1,400 to 1,900 degrees Fahrenheit. Ammonia injection is typically not used when the temperatures are below 1,400 degrees.

<u>Limestone Injection (75 to 90% SO_2 reduction)</u>
SO_2 emissions are controlled with the injection of pulverized limestone into the combustion zone. The SO_2 is absorbed by the limestone and forms gypsum. The heavier particles fall down to a hopper while the lighter particles are carried by the flue gas and then captured by the baghouse. Pursuant to PSD HI 88-02 review, 90% reduction can be met when high sulfur fuel is used.

Baghouses (99.99% PM/PM_{10} reduction)
PM/PM10 and opacity are controlled by the use of the following baghouses

TABLE 1

Emissions Unit	Baghouse (No./Manufacturer/Model	Operating Pressure
Boilers	2/Asea Brown Boveri/2	1-9" H_2O
Limestone Driers/Crushers	2/Mikro-Pulsaire/420S-10-50 H1/H2	1-7" H_2O
Limestone Feeders *	4/AEROPULSE/SB-9-4-H-N	1-7" H_2O
Limestone Storage Hoppers *	1/Mikro-Pulsaire/100-S-8-20 “C”	1-7" H_2O
Coal Crusher	1/Mikro-Pulsaire/64S-8-40 “C”	1-7" H_2O
Coal Storage Silos *	1/Mikro-Pulsaire/100-S-8-20 “C”	1-7" H_2O
Fly Ash Silo *	1/Mikro-Pulsaire/64S-8-20 TRH “B”	1-7" H_2O
Fly Ash Reinjection *	1/Mikro-Pulsaire/25S-8-30 “B”	1-7" H_2O
Bed Ash Silo *	1/Mikro-Pulsaire/64S-8-20 TRH “B”	1-7" H_2O
Bed Ash Hopper *	1/Mikro-Pulsaire/25S-8-30 “B”	1-7" H_2O
Ash Mixer *	1/Dalamatic Unimaster/DLMV20F	1-7" H_2O

* Baghouses that are insignificant since estimated emissions are small.

Good Combustion
Proper boiler operation and good combustion practices will help control PM, PM_{10}, CO, and VOC emissions. Also, low temperature-staged combustion design of the boilers reduces NOx emissions. SO_2 is also controlled by using coal with a maximum sulfur content of 1.5% by weight.

Fugitive Dust Suppression
Fugitive dust is controlled using the following methods throughout the facility:

TABLE 2

Emissions Unit	Control	Expected Efficiency
Coal Processing:		
Conveyors	covers	70%
Lowering wells	partial enclosures	75%
Active storage piles and mobile equipment	water	50%
Limestone Processing:		
Conveyors	covers	70%
Active storage piles and mobile equipment	water	50%
Ash Handling:		
Fly ash silo	mechanical pre-separator/telescopic chute	97%
Bed ash silo	mechanical pre-separator/telescopic chute	97%
Aggregate ash mixer	partial enclosure	85%
Handling of aggregate ash	water	50-90%

Applicable Requirements:

Hawaii Administrative Rules (HAR)
Chapter 11-59, Ambient Air Quality Standards
Chapter 11-60.1 Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-5 Permit Conditions
  - 11-60.1-11 Sampling, Testing, and Reporting Methods
  - 11-60.1-16 Prompt Reporting of Deviations
  - 11-60.1-31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-33 Fugitive Dust
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources
- Subchapter 7, Prevention of Significant Deterioration
- Subchapter 8, Standards of Performance for Stationary Sources
- Subchapter 9, Hazardous Air Pollutants

Code of Federal Regulations (CFR)

40 CFR 52.21 - Prevention of Significant Deterioration of Air Quality (PSD) is applicable to the cogeneration facility according to the previous terms and conditions that were a part of PSD No. HI 88-02. However, another PSD review is not applicable as there is no modification to increase air emissions.

40 CFR Part 60 - New Source Performance Standard (NSPS)

Subpart A - General Provisions

Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978.

§60.40a - Applicability.

§60.41a - Definitions.

§60.42a(a)(1) and (2) - The PM standards of 0.03 lb PM/MMBtu heat input and 99% reduction are met with the use of baghouses

§60.42a(b) - The opacity standard of 20% is met with the use of the baghouses.

§60.43a(a)(1) and (d) - The SO_2 standard of 1.20 lb SO2/MMBtu heat input and SO2 reduction of 90% are met with the use of limestone injection.

§60.44a(a)(1) and (2) - The NO_x standard of 0.50 lb NO_x/MMBtu heat input and NO_x reduction of 65% are met with the use of SNCR.

§60.45a - Commercial demonstration permit is for those proposing new emerging technologies.

§60.46a - The compliance provisions are met with the emissions standards.

§60.47a - The emission monitoring requirements are met with the use of CEMS for opacity, SO_2, NO_x, and CO_2 or O_2.

§60.48a - The compliance determination procedures and methods are met with the source performance tests for PM, opacity, SO_2, and NO_x.

§60.49a - The reporting requirements are met with the submittal of semi-annual and annual reports, deviations, and upset conditions.

Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels.

§60.116b(b) - Monitoring of operations for the dimensions of the tank only.

Subpart Y - Standards of Performance for Coal Preparation Plants.

§60.250 - Applicability.

§60.251 - Definitions.

§60.252(c) - The PM standard of 20% is met with the use of baghouses.

§60.253 - Monitoring of operations is for thermal dryers only.

§60.253 - Test methods and procedures are met with the source performance test for opacity.

Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants
§60.670 - Applicability.
§60.671 - Definitions.
§60.672(b) and (c) - The PM standard of 10% for any transfer point and 15% for any crusher are met with the use of baghouses.
§60.673 - Reconstruction does not apply to non-modified sources.
§60.674 - Monitoring of operations is for wet scrubbers only.
§60.675 - Test methods and procedures are met with the source performance test for opacity.
§60.676 - Reporting and recordkeeping are met with the submittal of semi-annual and annual reports, deviations, and upset conditions.

40 CFR Part 68 - Accidental Release Prevention Requirements

Consolidated Emissions Reporting Rule (CERR) reporting since each point source (boiler stack) potential emissions are ≥100 tpy per criteria pollutant and ≥5tpy of lead, pursuant to Table 1 of 40 CFR Part 51, Subpart A.

Compliance Data System (CDS) inspection because this is a 'Type A Source' (major source).

Compliance Assurance Monitoring (CAM) is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 Code of Federal Regulations, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential precontrol emissions that are greater than the major source level [>100 tpy]; and (5) not otherwise be exempt from CAM. CAM is applicable to the boilers for SO_2, NO_2, and PM since items 1 through 5 above apply. AES has met CAM requirements with the use of CEMS for SO_2, NO_x, and opacity. Monitoring opacity is sufficient since opacity is a direct correlation to PM emissions.

Non-Applicable Requirements:

Code of Federal Regulations (CFR)

40 CFR Part 63 - National Emission Standard for Hazardous Air Pollutants (NESHAPS)
The only equipment at the facility in a maximum achievable control technology (MACT) source category is the industrial process cooling tower. This cooling tower is not subject to NESHAPS, Subpart Q, because it did not use chromium-based water chemicals at the time this NESHAPS was promulgated, nor does AES use this chemical at the present time.

Synthetic Minor Source because this is a major source (potential to emit ≥100 tpy).

BACT Requirements:

This application does not propose any new or modified sources, so a new BACT review does not apply. Current BACT requirements, implemented by PSD Permit HI 88-02, include the following:

1. Limestone injection into the fluidized bed to reduce SO_2;
2. SNCR to reduce NOx;
3. Proper combustion to reduce CO, VOC, and hazardous air pollutant vapors; and
4. Fabric filters to reduce PM and hazardous air pollutant particles.

Insignificant Activities/Exemptions:

The following equipment are insignificant sources pursuant to HAR 11-60.1-82(f)(1), (5), (5), and (7) respectively:

1. Three (3) 300 gal above ground storage tanks and 17,631 gal spec used oil tank;
2. Emergency generator;
3. Emergency boiler feedwater pump; and
4. Fabric filter baghouses listed in the **Air Pollution Controls** section

The following equipment are insignificant sources pursuant to HAR 11-60.1-82(g)(2), (3), and (6) respectively:

1. Hand held equipment for various purposes;
2. Laboratory equipment used for chemical and physical analysis; and
3. Emergency fire water pumps

Alternate Operating Scenarios:

Haul trucks may be used to transport coal to the facility in lieu of the covered overland conveyor. Fugitive emissions should be similar for both scenarios since the added paved road will be offset with the subtraction of the overland conveyor, lowering wells, and conveyor 1.

Alternative fuels were proposed as alternate scenarios, but they will be considered as normal operations since the emissions were calculated as such and are used intermittently with coal.

Project Emissions:

The potential emissions from coal combustion in the boilers were derived from source performance test data and continuous emissions monitoring systems (CEMS). All other potential emissions for fuel oil combustion in the boilers and limestone dryers, coal and limestone processing, ash handling, and cooling tower were based on AP-42 emission factors. The coal and ash emissions include metal HAPs that are part of the coal and ash dust. All emissions include air pollutant controls as mentioned in the **Air Pollution Controls** section. The calculations were performed during the PSD HI 88-02 review and addition of the limestone dryers in 1990. There have been no changes in potential emissions.

The following **TABLE 3** contains the maximum permitted emission rates for the boilers' stack as referenced from PSD HI 88-02 and NSPS Da.

TABLE 3

Compound	Maximum Emission Limits [1]			
	lb/hr	lb/mmBtu	ppmvd @ 15%O_2	gr/dscf @ 12% CO_2, dry
SO_2	645.0	1.2	48	--
NO_X baseload [2]	236.5	0.5	25	--
NO_X low load [2,3]	236.5	0.5	59	--
CO	408.4	--	70	--
VOC [4]	32.2	--	3.5	--
Lead (Pb)	5.7	--	--	1.2E-3
PM/PM_{10} [5]	32.2	0.03	--	7.0E-3
Fluorides	0.02	9.3E-5	--	--
Mercury	0.17	8.1E-5	--	--
Beryllium	0.067	3.1E-5	--	--
Sulfuric Acid Mist	4.10	1.9E-3	--	--

Notes:
1. 3-hour average with standard conditions assumed to be 68^{0}F and 29.92 inches Hg. Stack concentrations assumed to be 5% H_2O, 6.5% O_2 and 12% CO_2. Stack temperature and pressure at outlet is 265^{0}F and 29.92 inches Hg respectively.
2. Molecular weight of NO_x taken to be that of NO_2 (46).
3. Low load is an individual boiler heat input of less than 450 mmBtu/hr.
4. Molecular weight of VOC taken to be that of propane (44).
5. PM_{10} emission rate assumed to be 100% of the total particulate matter emission rate.

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The following **TABLE 4** contains the facility-wide maximum potential annual emissions based on operating 8,760 hr/yr with air pollution controls:

TABLE 4

Pollutant	Boilers (tpy)	Coal Processing (tpy)	Limestone Processing (tpy)	Ash Handling (tpy)	Cooling Tower (tpy)	Total Emissions (tpy)
SO_2	2,825		21.02			2,846
NO_2	1,036		6.13			1,042
PM/PM_{10}	141	4.27	2.02	3.32	200	351
CO	1,789		0.09			1,789
VOC[3]	141		0.01			141
Lead (Pb)	25	1.00e-05	1.00e-07	1.00e-05		25
Arsenic	7.40e-03	1.00e-05	1.00e-07	1.00e-04		7.51e-03
Beryllium	2.90e-01	1.00e-06				2.90e-01
Cadmium	3.44e-04	1.00e-07	1.00e-08	1.00e-06		3.45e-04
Chromium	1.10e-02	1.00e-05	1.00e-07	1.00e-04		1.11e-02
Manganese	1.80e-02	1.00e-05				1.80e-02
Mercury	7.40e-01	1.00e-07		1.00e-06		7.40e-01
Nickel	1.80e-02		1.00e-08	1.00e-04		1.81e-02
Selenium	5.60e-04	1.00e-06	1.00e-08	1.00e-05		5.71e-04
Benzene	8.80e-04		1.00e-04			9.80e-04
Chlorobenzene	3.00e-05					3.00e-05
Cresols	2.80e-04		1.00e-04			3.80e-04
Ethylbenzene	3.00e-05		1.00e-05			4.00e-05
Formaldehyde	4.50e-05		1.00e-05			5.50e-05

Pollutant	Boilers (tpy)	Coal Processing (tpy)	Limestone Processing (tpy)	Ash Handling (tpy)	Cooling Tower (tpy)	Total Emissions (tpy)
n-hexane	7.10e-04		1.00e-04			8.10e-04
Naphthalene	3.00e-05		1.00e-05			4.00e-05
POM	1.00e-05		1.00e-06			1.10e-05
Toluene	8.80e-04		1.00e-04			9.80e-04
Xylenes	1.89e-02		1.00e-04			1.90e-02
Flourides	2.00e-01					2.00e-01
Chlorine					4.00e-03	4.00e-03
Sulfuric Acid Mist	4.10e+00					4.10e+00
					Total HAPs (not including sulfuric acid mist):	26.31

Ambient Air Quality Assessment (AAQA):

Air quality impacts from emissions of NO_x, SO_2, CO, PM_{10}, and Pb were predicted for point sources using atmospheric dispersion modeling. Concentrations were predicted for the boilers and limestone dryers only. Particulate emissions from the baghouses other than the boilers were not included since they were deemed insignificant (less than 0.01 tpy). The cooling tower is not a point source and therefore was not modeled.

An AAQA was performed using EPA-approved ISCST dispersion models for the boilers and limestone dryers respectively. The boiler model was performed for the PSD review and a second was performed for the addition of the limestone dryers. CO and PM_{10} were not calculated for the limestone dryers because it was deemed insignificant. Complex terrain were considered due to the Waianae mountain range to the north. Downwash was also considered for the building structures and stack. Five years of surface meteorological data obtained from nearby Barbers Point Naval Air Station from 1967 to 1971 was used. The twice-daily mixing depths from Lihue, Kauai were used for the same period. The highest impacts for both models were combined to give a conservative prediction in comparison to national and state ambient air quality standards (NAAQS and SAAQS) as shown in **TABLE 5**.

TABLE 5
Predicted Criteria Pollutant Impacts

Pollutant	Averaging Time	Boilers ($\mu g/m^3$)	Limestone Dryers ($\mu g/m^3$)	Total ($\mu g/m^3$)	Air Standard ($\mu g/m^3$)	Percent Standard (%)
NO_X	Annual	1.6	1.9	3.5	70	5
CO	1 Hr	112.3	-	112.3	10,000	1
	8 Hr	61.3	-	61.3	5,000	1
PM_{10}	24 Hr	18.6	-	18.6	150	12
	Annual	6.1	-	6.1	50	12
SO_2	3 Hr	148.3	97.3	245.6	1,300	19
	24 Hr	33.5	27.1	60.6	365	17
	Annual	4.4	6.8	11.2	80	14
Pb	Quarterly	0.3	-	0.3	1.5	20

The air quality impact from the allowable emissions of non-criteria pollutants was estimated by scaling the maximum 24-hr concentration of SO_2 by the allowable emission rate. The estimated maximum concentrations for the non-criteria pollutants are shown in **TABLE 6**. Emissions on non-criteria pollutants (compounds for which there are no ambient air quality standards) from the facility do not exceed recommended American Conference of Government Industrial Hygienists (ACGIH) concentrations.

TABLE 6
Non-Criteria Pollutant Impacts

Pollutant	Maximum Modeled 24-hr Impact ($\mu g/m^3$)	Continuous TVA-TWA ($\mu g/m^3$)	Percent of TVA-TWA
Fluorides	0.001	595	0.00017%
Mercury	0.42	2.4	17.50%
Beryllium	0.003	0.5	0.60%
Sulfuric Acid Mist	0.21	240	0.088%
Benzene	0.003	7143	0.00004%
Arsenic	0.008	47.6	0.017%

Note:
1. Maximum impact proportional to 24-hr SO2 impact using allowable emission rates shown in Table 3.
2. Continuous TVA-TWA is ACGIH 8-hr or 10-hr TLV-TWA divided by 4.2.
3. A value greater than 100% indicates the maximum modeled concentration exceeds the recommended TVA-TWA.

Existing Permit Conditions:

The following PSD HI 88-02 / CSP No. 0087-02-C conditions shall be carried over:

1. Boilers

   a. Fuel limits and specifications for coal, fuel oil no. 2, tire derived fuel, spent activated carbon, and spec used oil (updated). Also monitoring of spec used oil was requested by AES to be twice monthly because individual delivery receipts would hinder the supply process. Therefore, the spec used oil supplier are reputable and will be testing twice monthly at their facility.
   b. Air pollution control equipment requirements for limestone injection system, SNCR, and baghouses (updated).
   c. Ammonia storage tank requirements.
   d. Fugitive emission requirements.
   e. Stack emission limits.
   f. Fuel monitoring and recordkeeping (Sulfur testing for fuel oil no. 2 has been updated).
   g. CEMS requirements for opacity, NO_x (as NO_2), SO_2, and CO_2 or O_2 concentrations (updated as required in NSPS Da).
   h. Notification and reporting for deviations and compliance requirements (updated).
   i. Semi-annual reports for excess emissions and monitoring; and annual emissions reports (updated).
   j. Annual performance tests (updated).
   k. CFR Parts 52 (PSD), 60 (NSPS Subpart A, Da, Y, and OOO), and 68 (Chemical Accident Prevention Provisions.

2. Coal Processing

    a. Equipment descriptions (updated).
    b. Air pollution control equipment requirements for baghouses (updated).
    c. Baghouse emission limits.
    d. Fugitive emission requirements.
    e. Notification and reporting for deviations and compliance requirements (updated).
    f. Semi-annual reports for monitoring and annual emissions reports (updated).
    g. Annual performance tests (updated).
    h. CFR Part 60 NSPS Subpart A and Y.

3. Limestone Processing

    a. Equipment descriptions (updated).
    b. Fuel limits and specifications for fuel oil no. 2 and spec used oil (updated).
    c. Air pollution control equipment requirements for baghouses (updated).
    d. Baghouse emission limits.
    e. Fugitive emission requirements.
    f. Notification and reporting for deviations and compliance requirements (updated).
    g. Semi-annual reports for monitoring and annual emissions reports (updated).
    h. Annual performance tests (updated).
    i. CFR Part 60 NSPS Subpart A and OOO

4. Cooling Tower

    a. Operational requirements including Chromium treatment ban, circulating rate, drift rate, dissolved solids, and chlorine.
    b. Monitoring and recordkeeping on the manufacturer's data, chemicals used, and water analyses.
    c. Notification and reporting for deviations and compliance requirements (updated).
    d. Semi-annual reports for monitoring and annual emissions reports (updated and inserted forms).

5. Ash Handling

    a. Equipment descriptions (updated).
    b. Fugitive emission limits.
    c. Fugitive emission requirements.
    d. Notification and reporting for deviations and compliance requirements (updated).
    e. Possible annual performance tests in the future.

6. Storage Tanks

    a. Equipment descriptions (updated).
    b. Requirements to be exempt from NSPS Kb including the storage of only fuel oil no. 2 and spec used oil.
    c. Records of tank descriptions and fuel stored.
    d. Notification and reporting for deviations and compliance requirements (updated).

New Permit Conditions:

The following new permit conditions are proposed to ensure compliance with NSPS Da:

1. Boilers

    a. Summary semi-annual reports as required by NSPS Da.
    b. Baghouse monitoring as a means of periodic monitoring.

2. Coal Processing

    a. Alternate operating scenarios for the using haul trucks in lieu of the overland conveyors as proposed by the applicant.
    b. Baghouse monitoring as a means of periodic monitoring.
    c. Visible emissions monitoring as required by EPA.

3. Limestone Processing

    a. Baghouse monitoring as a means of periodic monitoring.
    b. Visible emissions monitoring as required by EPA.

Other Issues/Conditions:

There is no specific exemption listed under HAR 11-60.1-82(f,g) that would exempt the cooling tower from a covered source permit. Upon review, the estimated emissions of PM/PM_{10} from the cooling tower is 200.1 tpy. As mentioned in the **Ambient Air Quality Assessment**, the cooling tower was excluded from modeling. EPA promulgated a national emission standard for hazardous air pollutants (NESHAPS) for industrial process cooling towers on September 8, 1994 (40 CFR Part 63, Subpart Q) that prohibits the use of chromium-based water treatment chemicals. This NESHAPS does not apply to the cooling tower because chromium-containing water treatment chemicals are not used. A permit condition is used to maintain the non-applicability of the federal NESHAPS.

Conclusion and Recommendation:

The facility complies with all State and Federal laws, rules, regulations, and standards with regards to air pollution. Therefore, a renewal for Covered Source Permit for AES Hawaii, Inc. is recommended based on the information provided in the air permit application and subject to the following:

1. Above permit conditions;
2. 30-day public review period; and
3. 45-day EPA review period.